

REMARKS

The Office action of 28 June 2005 (Paper No. 2005252005) has been carefully considered.

The specification is being amended to correct minor errors and improve form. Claims 1, 6 and 10 thru 13 are being amended, and new claims 16 thru 20 are being added. Thus, claims 1 thru 20 are pending in the application.

In paragraph 1 of the Office action, the Examiner objected to the drawings, and required labeling of Figures 1A and 1B as "Prior Art" because "only that which is old is illustrated." Applicant respectfully opposes this requirement for the reasons stated in the Petition filed on 20 July 2005, which reasons are incorporated into this Amendment by reference thereto. Thus, Applicant requests that the objection to the drawings be withdrawn.

In order to avoid abandonment of the application however, Applicant filed corrected formal Figures 1A and 1B bearing a "Prior Art" legend on 20 July 2005. As stated in the Transmittal of corrected formal Figures 1A and 1B, entry of corrected formal Figures 1A and 1B is respectfully requested to be contingent **only** upon final denial of Applicant's Petition filed on 20 July 2005.

In paragraph 3 of the Office action, the Examiner objected to the drawings as failing to include reference numeral 70 in Figure 2A. Figure 2A is being amended to change reference numeral “70” to “7”, thereby eliminating an inadvertent error which occurred during preparation of the drawings. A corrected formal drawing of Figure 2A is being submitted herewith. Thus, the objection to the drawings should no longer apply.

In paragraph 4 of the Office action, the Examiner objected to the specification for informalities. As mentioned above, the specification is being amended to correct minor errors and improve form. Among the errors being corrected, the character “s” appearing in the specification is being amended to read “colors”. The “s” was a result of an inadvertent error which occurred during preparation of the specification. Accordingly, the objection to the specification should no longer apply.

In paragraph 6 of the Office action, the Examiner rejected claims 1 thru 5 and 9 thru 15 are rejected under 35 U.S.C. §102(e) for alleged anticipation by Humbs *et al.*, U.S. Patent No. 6,774,392. In paragraph 20 of the Office action, the Examiner rejected claims 6 thru 8 under 35 U.S.C. §103(a) for alleged unpatentability over Humbs *et al.* ‘392 in view of Tatsufumi MURAYAMA, Japanese Patent Publication No. 2001-230073.

It is respectfully submitted that Humbs *et al.* ‘392 is not valid prior art under 35 U.S.C. §102(e) as alleged by the Examiner in paragraph 6 of the Office action. Specifically, 35 U.S.C. §103(c) provides the following:

“Subject matter developed by another person, which qualifies as prior art only under one or more of subsections (e), (f), and (g) of section 102 of this title, shall not preclude patentability under this section where the subject matter and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person.”

In the latter regard, it should be noted that both the Humbs *et al.* ‘392 patent and the present application are assigned to the “same person” in the context of 35 U.S.C. §103(c), that is, to Samsung SDI Co., Ltd. Therefore, as indicated in 35 U.S.C. §103(c), the rejection under 35 U.S.C. §102(e) cannot preclude patentability of the invention of the present application.

Independent claim 1 is being amended to improve its form. As stated above, the rejection under 35 U.S.C. §102(e) is not valid since Humbs *et al.* ‘392 is not valid prior art under 35 U.S.C. §103(c). Therefore, allowance of independent claim 1 and its dependent claims is requested.

Dependent claim 16 is being added to recite a further feature of the invention of claim 1. Thus, new claim 16 recites that the insulator layer has two laterally displaced sides, and further recites the barrier as being formed on the insulator layer and as extending outwardly from at least one of the two sides of the insulator layer for preventing ink for the organic polymer layer from running out of the channel.

In paragraph 7 of the Office action, the Examiner indicated that, in Humbs *et al.* '392, an insulator layer 3 is formed on the substrate 1 in Figure 3A of the patent, thereby forming a channel in a predetermined pattern 40. Actually, in Figure 3A of Humbs *et al.* '392, the second insulator layers 4 are formed on the first insulator 3 so as to form channels 40 located between each pair of the second insulator layers 4.

The Examiner then stated, in paragraph 7 of the Office action, that Humbs *et al.* '392 provides a "barrier (8) formed at either side of the insulator layer (4) of at least one end of the channel (40; see figure 3a) for preventing ink for the organic polymer layer from running out from both ends of the channel" (quoting from paragraph 7, lines 5-7 of the Office action). However, the barriers 8 of Figure 3A of Humbs *et al.* '392 do not meet the requirements of new dependent claim 16.

Specifically, Humbs *et al.* '392 does not disclose or suggest a barrier formed on the insulator layer and extending outwardly from at least one of the two sides of the insulator layer, as recited in dependent claim 16. In fact, referring to Figure 3A of Humbs *et al.* '392, the barriers 8 are merely placed in the center of each channel 40 at each end 41 and 42 of the channel 40. As also shown in Figure 3A, none of the barriers 8 extends to each side so as to contact the pair of second insulator layers 4 located at each side of the barriers 8. Thus, it is impossible for the barriers 8 of Figure 3A of Humbs *et al.* '392 to carry out the function of the barrier recited in independent claim 1 and dependent claim

16 of the present application, that is, the function of preventing ink for the organic polymer layer from running out of the channel. As is clear from Figure 3A, there are gaps on both sides of the barriers 8 so that ink can freely run out of the channels 41 through the gap provided between the barriers 8 and the respective second insulator layers 4 located on the sides of the barriers 8.

In the latter regard, Humbs *et al.* '392 states (at column 3, lines 11-14) that the barrier 8 is provided for the purpose of "blocking flow of the organic polymer layer at the ends of the pattern defined by the insulator layer" (quoting from column 3, lines 11-12), and thus there is no disclosure or suggestion in Humbs *et al.* '392 of the provision of a barrier for preventing ink from running out of the channel.

For the reasons stated above, Humbs *et al.* '392 is not a valid prior art reference under 35 U.S.C. §102(e) due to the restriction imposed on prior art under 35 U.S.C. §103(c). However, even if Humbs *et al.* '392 were valid prior art, as indicated above, the invention recited in dependent claim 16 is distinguishable from the cited prior art so as to preclude rejection under 35 U.S.C. §102 or §103.

Independent claim 16 recites an organic light emitting diode (OLED), comprising a substrate, an insulator layer, an organic polymer layer, a barrier, and a second electrode layer with the functions recited in the claims, and also recites that the barrier comprises at

least one first barrier and at least one second barrier with the functions recited therein, those functions corresponding to the functions recited in dependent claim 6 of the present application.

In paragraph 21 of the Office action, the Examiner rejected dependent claim 6 under 35 U.S.C. §103 based on the combined disclosures of Humbs *et al.* '392 and Tatsufumi '073. In paragraph 21 of the Office action, the Examiner admitted that Humbs *et al.* '392 was silent regarding recitation of a second barrier for preventing polymer ink from running in from neighboring channels, but cited Tatsufumi '073 as disclosing "a barrier for preventing the polymer ink from running in from neighboring channels (15; figure 3; abstract) in order to increase the reliability of the display" (quoting from paragraph 21, lines 5-7 of the Office action). However, Applicant disagrees with the rejection under 35 U.S.C. §103 for the following reasons.

First, as mentioned above, Humbs *et al.* '392 is not valid prior art under 35 U.S.C. §102(e) due to the restriction imposed on prior art by 35 U.S.C. §103(c). Second, Humbs *et al.* '392 does not at all mention or suggest a solution to the problem of ink flowing out of the channel, the barriers of Humbs *et al.* '392 merely being provided for the purpose of blocking flow of polymer from the channel. In fact, by providing gaps between the barrier 8 and the respective insulators provided at the sides of each barrier, Humbs *et al.* '392 actually teaches away from any solution to the problem of ink flow out of the

channel. Thus, it is doubtful that one of ordinary skill in the art, upon reviewing Humbs *et al.* '392, would be motivated to seek a solution to the problem of ink flow out of the channel.

Furthermore, Tatsufumi '073 does not disclose or suggest at least one first barrier for preventing polymer ink from running out of the channel, and does not disclose or suggest at least one second barrier for preventing polymer ink from running in from the neighboring channels, as recited in dependent claim 6, and as also recited in new independent claim 16. In that regard, it should be noted that Tatsufumi '073 has no relationship or relevance to polymer ink flow. Rather, Tatsufumi '073 relates to an evaporation method for light emitting material, which is not at all related to the inkjet printing method of the present invention. Thus, Tatsufumi '073 would not be concerned with the problem of overflow of polymer ink.

In addition, the Abstract appearing on the first page of Tatsufumi '073 states that the disclosed arrangement includes "plural barrier ribs of electric insulation protruding to the substrate which expose at least a part of the first display electrodes" (quoting from the Abstract (57), lines 7-9).

In addition, a translation of the Abstract (related to Figure 3) is as follows:

"An organic electro-luminescence display panel

having an image display arrangement area which is constructed with a plural number of luminous parts, comprising:

- a substrate on which a plural number of first display electrodes which corresponds, on the surface, to the luminous part are formed;

- a plural number of electrical insulating barriers (7), being protruded on the substrate, for exposing at least part of the first display electrode;

- a thin film of at least one layer of the organic electro-luminescence medium, which is formed on each of the exposed first display electrode;

- a plural number of second display electrode which is formed on the thin film of the organic electro-luminescence medium, which is located between the barriers (7);

- a plural number of electrically conductive wires extending from between the barriers formed on the second display electrode toward the outside of the image display arrangement area;

- wherein each of the barriers extends to the outside of the image display arrangement area, and includes a barrier end (15) which perpendicularly crosses the barrier in the extending direction of the barrier, and which has a larger width than the that of the barrier" (quoting from section (57) on the first page of Tatsufumi '073).

Furthermore, a translation of paragraph [0013] of Tatsufumi '073 is as follows:

"Barrier end 15 of barrier 7 is formed outside the image display arrangement area so as to prevent short circuit among the second display electrodes" (quoting from paragraph [0013] of Tatsufumi '073).

Thus, as indicated by the English language Abstract appearing on the first page of Tatsufumi '073, as well as the Abstract (related to Figure 3) and paragraph [0013] of Tatsufumi '073, the translations of which are set forth above, there is no disclosure or suggestion whatsoever in Tatsufumi '073 of the provision of barriers for blocking the

flow of ink into or out of channels. Rather, the sole purpose of the barriers 7 and the barrier ends 15 of Tatsufumi '073 is to expose at least part of the first display electrode and to prevent short circuit among the second display electrodes. Thus, even if one of ordinary skill in the art were motivated by Humbs *et al.* '392 to seek a solution to the “ink flow” problem relating to each channel of the arrangement of Humbs *et al.* '392, that person of ordinary skill in the art would not incorporate the disclosure of Tatsufumi '073 into Humbs *et al.* '392 because Tatsufumi '073, like Humbs *et al.* '392, does not even discuss the problem of ink flow into and out of channels, and clearly does not provide a solution to that problem.

For the latter reasons, it is submitted that, even if Humbs *et al.* '392 were valid prior art, independent claim 16 and its associated dependent claims recite the invention in a manner distinguishable from the prior art so as to preclude rejection under 35 U.S.C. §102 or §103.

Finally, new independent claim 20 recites the basic composition of the OLED as set forth in independent claim 16, but further recites that the OLED further comprises at least one blocking member for interrupting outflow of the organic polymer layer and provided substantially at a center of two ends of each channel (as also recited in dependent claim 10), wherein the “at least one blocking member” includes at least two elements in a wedge shape, centers of the wedge being opposite to each other (as also

recited in dependent claim 12). In that regard, in paragraphs 13 and 15 of the Office action, the Examiner set forth reasons for rejection of dependent claims 10 and 12, respectively, under 35 U.S.C. §102 based on Humbs *et al.* '392. As stated above, Humbs *et al.* '392 is not valid prior art. However, with respect to the Examiner's assertion in paragraph 15 of the Office action, it is not clear that Humbs *et al.* '392 teaches that blocking members 8 include at least two elements in a wedge shape, centers of the wedge being opposite to each other. In that regard, the Examiner merely cites Figure 3A of Humbs *et al.* '392, but a review of that figure does not disclose a wedge shaped blocking member 8. Rather, the barriers 8 of Figure 3A of Humbs *et al.* '392 appear to be in the form of cubes (*see* both Figures 3A and 3B of Humbs *et al.* '392). Therefore, it is submitted that the invention recited in dependent claim 12, and also now recited in new independent claim 20 is distinguishable from the prior art cited by the Examiner so as to preclude rejection under 35 U.S.C. §102 or §103.

Submitted concurrently herewith is a corrected formal drawing of Figure 2A in which reference numeral "70" has been changed to "7". Entry of this corrected formal Figure 2A and confirmation of entry in writing in the next Office action are respectfully requested.

In view of the above, it is submitted that the claims of this application are in condition for allowance, and early issuance thereof is solicited. Should any questions remain unresolved, the Examiner is requested to telephone Applicant's attorney.

No fee is incurred by this Amendment.

Respectfully submitted,



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